

DEVELOPER'S GUIDE

TTC Submission Requirements for Developments Adjacent or Connecting to TTC Structures or Right-of-Way

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1.0 Purpose of a TTC Review

The Toronto Transit Commission (TTC) reviews development proposals which are located ***within 60 metres of a TTC structure or right-of-way (R-O-W)***. This review ensures that a proposed development will not adversely impact TTC's current and future operations or impact the integrity of TTC's facilities, property, and structures.

The TTC review of a development proposal is broken down into two separate review types: TTC Planning Review - examining transportation/urban planning and TTC Technical Review – examining the technical engineering aspects of the proposal. This review process follows the municipal approval process running concurrently with the City Planning & Building permitting process.



As a result of the Planning or Technical Review, modification of the development proposal may be required in order to bring the development into conformance with TTC requirements, and/or reduce or eliminate any impact(s) on TTC operations, facilities, property, and/or structures. For developments that are subject to a TTC Technical Review, written responses to comments will be required, explaining rationale or indicating agreement to make changes. Upon receipt of technical documents that address technical comments satisfactorily, TTC will provide written notice to the Developer. The City of Toronto requires TTC's written notice of the satisfactory completion of the Technical Review prior to entering into a site plan agreement and prior to issuing a shoring/building permit for the proposed development.

2.0 TTC Reviews

Prior to the submission of a planning application it is recommended that the Developer contact the TTC's Development Coordinator to discuss the proposal and potential impacts upon TTC property, facilities, and/or structures.

The following steps are required as part of the TTC Technical review process:

1. Contact the TTC's Development Coordinator for preliminary information regarding the location of the development site in relation to the TTC 60m Development Review Zone and the need for a TTC Technical Review.

In order to establish the location of TTC infrastructure, within the 60m zone of influence, the third party shall obtain TTC technical information, including TTC facility location, structural, electrical, and mechanical drawings in relation to the development site. A pre-condition to obtaining the TTC facility drawing information is the execution of a Non-Disclosure Agreement (NDA) by the third party and the TTC regarding the release of the TTC facility information in a form and content similar to that attached as Appendix I. The process for drawing distribution requires that the third party visit our office to view and select the drawings required for their project/works from our archived contract library. Call the TTC's Engineering Department at (416) 590-6396 to initiate the third party drawing request process. It will take approximately 4 business days after your visit to the TTC office for the selected drawings to be emailed to you.

Note: TTC facility drawings are the property of the TTC and shall not be reproduced or transmitted to any other party without the consent of the TTC. TTC facility drawings may be obtained at a cost of \$25.00 plus HST for each of the first six and \$5.00 plus HST for each additional drawing. (Drawings will be released in PDF file format only) Payment by cheque or credit card is required prior to receipt of the documents.

2. To initiate the Technical Review, submit the Request for Review Level form and associated materials to the Development Coordinator. The request for review level is required for every Technical Review and allows preliminary review of the development proposal. Upon completion of the preliminary review, the Development Coordinator will confirm the Technical Review level and submission requirements.
3. Preliminary meetings are required for proposals resulting in a Technical Review Level 5 or greater, or if a new entrance connection forms part of the development proposal. The

purpose of a preliminary meeting provides the Developer an opportunity to meet with TTC staff to discuss the proposed development and determine constraints, if any, to the design and construction of the development.

3.0 Planning Review

The TTC's Planning Review is the first step in the review of a development proposal and is coordinated by the TTC Strategy and Service Planning Department. The TTC Planning Review does not require a fee payment and is triggered by TTC's receipt of a planning application from City of Toronto Community Planning or Committee of Adjustment. Many development applications received will not require a Technical Review because they are located outside of the TTC's 60m review zone, but other conditions may be placed on the development to support transit ridership and mitigate impacts on transit operations. The TTC Planning Review examines the impacts of the proposed development on TTC facilities and operations. Planning considerations can include station/terminal accessibility, proposed use types, building placement, traffic impacts, urban design, access, and pedestrian connections. The TTC Planning Review will also confirm the necessity for a TTC Technical Review and set out the Technical Review level if one is required.

Comments included in the TTC Planning Review will follow the City Planning process and will set out conditions for the proposed development. The conditions will include the requirements for a technical review submission, entering into specific agreements, land transfers, station access requirements, and/or easements which may be required by the TTC. The requirement for a given agreement between the Developer and the City of Toronto and/or the TTC will vary depending upon the complexity of the proposal. The following sets out, in general terms, the type, purpose, and approximate timing of typical agreements. Other agreements not listed below may also be required depending upon the proposal.

3.1 Land Transfer or Exchange Agreements:

The TTC may require a Developer to enter into a Land Transfer Agreement with the City when land is required for TTC facilities within the development site. In some cases this agreement may be requested when TTC or City lands are required by the Developer in order to facilitate the development.

Note: The TTC requires 3.0 metres of property around all TTC facilities. This property will be requested by the TTC in either strata or fee simple, and will be owned by the City on behalf of the TTC. The properties around the TTC facilities will provide the TTC future access for the operation, maintenance, expansion, and reconstruction of the TTC facilities.

3.2 Construction Agreement:

A Construction Agreement will generally be required for development proposals requiring a technical review Levels 3 – 6. . A Construction Agreement is established between the Developer, TTC and/or the City of Toronto and sets out the specific requirements, and parameters of the construction of the development to ensure protection of TTC infrastructure and operations. This agreement must be executed prior to the release of the first building permit and start of any excavation and shoring work. In some circumstances this agreement may be required prior to demolition works on the site.

3.3 Mutual Easement and Shared Facilities Agreement (MESFA):

A Mutual Easement and Shared Facilities Agreement (MESFA) may be required for development proposals requiring a Level 3 and above. The MESFA is necessary where a development is adjacent or connects to a TTC facility or structure, including an Entrance Connection. This agreement may also be required if the development is built overtop of a TTC structure or facility and where there are any encroachments into the TTC right-of-way. This agreement will outline the requirements for TTC access to the structures and facilities including access over or through the development parcel in order to facilitate the maintenance, rehabilitation, or replacement of these features. This agreement is required prior to the issuance of the full building permit for the development and comes into effect upon completion and occupancy of the development.

3.4 Mutual Easement and Shared Facilities Agreement (MESFA) for Entrance Connections:

The provision of an Entrance Connection refers to all aspects of a transit connection, including but not limited to the design, construction, the supply and installation of fare collection equipment, electrical services, stairs, elevators, escalators, security features, wayfinding and signage, and other elements or components of an Entrance Connection as applicable. A MESFA is required for all developments which propose an Entrance Connection to a TTC Station. Entrance Connection proposals are required to undergo a TTC Technical Review as further outlined in Section 7.5 ***Entrance Connection Review Submissions***.

Please contact the TTC's Development Coordinator for further details regarding Entrance Connection Agreements and obtain a copy of the TTC's Entrance Connection Guide.

4.0 Technical Review

The TTC Technical Review consists of the review of the construction documents (plans and specifications) for the proposed development as submitted to the City of Toronto through the building permitting process. The focus of the Technical Review is the impact that the construction of the project will have on TTC operations and facilities. Also, the Developer shall consider and incorporate CPTED (Crime Prevention through Environmental Design) principles at areas of interaction between the Development and TTC to prevent possible adverse impact from the development on the personal security of TTC employees and customers. The Technical Review may include the review of the demolition,

shoring/excavation, foundation, structural, superstructure, and mechanical/electrical components of the development. This review is required to be fully completed prior to the issuance of a building permit for the applicable phase or stage of development.

The length of time required for the Technical Review will depend upon the size, complexity, and degree of impact of the project upon the TTC structures and facilities. Generally the TTC requires a **4-6 week** review period for each complete submission. Multiple submissions are generally required in order to fully satisfy TTC's requirements. The review and acceptance of a development proposal by the TTC does not exempt the development from compliance with applicable codes and standards, local by-laws, and other governing regulations. Upon final completion of the Technical Review, TTC will provide the necessary clearances to the City of Toronto Planning & Building Departments.

The TTC has adopted a flat rate fee approach towards Technical Reviews. For most Technical Reviews the cost to review a development proposal by TTC staff will be a fixed cost that will be determined through the Technical Review process. The technical review zone is identified on TTC Development Review Zone drawings which can be viewed at the local Planning Department office.

4.1 Technical Review Classification

The following table outlines the six levels of technical review (plus a "Property Protection" category) and their associated review fee in regards to development proposals within 60 metres of the TTC structure or right-of-way:

Level of Review	Type of Review	Fixed Rate Fee	
		Exc. HST	Inc. HST
1	Development within 60 metres, no perceived impact on TTC structures	\$1,000.00	\$1,130.00
2	Development within 60 metres, potential impact on TTC structures	\$4,000.00	\$4,520.00
3	Founded near TTC structures with perceived impact on TTC structures	\$8,000.00	\$9,040.00
4	Founded near TTC structure with potential significant impact on TTC structures	\$20,000.00	\$22,600.00
5	Overtop of or within 1 metre of a TTC structure and/or connecting to TTC structure	\$27,000.00	\$30,510.00
6	Severe complexity, fixed fee review not considered practical, cost reimbursable	Cost Reimbursable	
Property Protection	Developments adjacent or overtop of planned or future TTC facilities/Rights-Of-Way	Varies depending upon complexity of proposal	

The Developer must submit a cheque for the fees corresponding to the established Technical Review level either prior to or along with the initial Technical Review submission. Upon receipt of a submission and cheque, the TTC will initiate the technical review and confirm the review level classification based on the more detailed drawings.

For level 5 & 6 Technical Reviews the Developer may pay the Technical Review fee in separate instalments of a minimum amount of \$9,000. The first instalment must be paid prior to or along with the first submission of the Technical Review. The total fee must be paid prior to the TTC final clearance of the proposal.

Note: Significant changes in the development proposal or construction methods may result in a re-categorization of the review level. The TTC reserves the right to change the fee category if a revised design results in greater impacts upon TTC facilities or structures. In the event the fee category changes at a subsequent stage in the process, an adjustment will be made and the Developer must pay or the TTC will refund the cost difference between the technical reviews. The TTC may provide documentation to substantiate the cost difference.

5.0 Cost Reimbursable Technical Reviews

Level 6 Technical Reviews which examine complex proposals will be undertaken on a cost reimbursable basis. In the event of a cost reimbursable review, an estimate of the cost of the review will be developed by the TTC and provided to the Developer in advance of the commencement of the Technical Review. At the time a technical review is initiated a deposit amount will be requested from the Developer to cover the review fees.

The determination of the need for a cost reimbursable review is at the sole discretion of the TTC. It is intended that cost reimbursable reviews would be the exception rather than the rule and would only be utilized in extraordinary cases where multiple complex reviews are expected to be required prior to final approval.

6.0 Costs Not Covered By Technical Review Fees

The flat rate technical review fee, as identified through the development review classification only applies to the cost of the technical review. The following is a list of some of the costs which may be encountered in addition to the technical review fee. There may be additional costs which have not been included in the list.

- Cost of TTC power cuts, electrical or fire system load tests, including supervisory costs.
- Final connections to TTC electrical, communications, fire alarm systems.
- Flag duties for TTC operations.
- TTC safety/training requirements.
- Cost of operational diversions or other impacts on TTC operations.

7.0 Technical Review Submission Requirements

Information, drawings, and documents required for the review will vary by development. Not every development will require all the items outlined below and some developments may require additional items not specifically identified below. Actual requirements will be

determined through the completion of a formal Request for Review Level submission or a meeting with TTC staff. The information, drawings, and documents submitted by the Developer must demonstrate that the proposed development will not adversely impact TTC's current and future operations or impact the integrity and durability of TTC's facilities, property, and structures. **All documents must be signed and sealed by the appropriate professional responsible for preparing these documents.**

7.1 Level 1 & 2 Reviews – Developments Within 60-Metres of TTC Structures or R-O-W

The following drawings/documents may be required for review.

1. An up-to-date survey and associated submittals as described in Appendix II.
2. A site plan of the development showing plan, profile and cross sectional outlines of existing TTC infrastructure, including centre lines of track for bored tunnel and reference lines of construction for box structure and other rights-of-way, together with minimum clearance dimensions between existing TTC structures and new proposed structures, all as further described in Appendix II.
3. Architectural drawings, structural drawings, foundation drawings and excavation shoring drawings.
4. Plan and cross-sections of the development locating the TTC structure/R-O-W and founding elevations relative to the development.
5. Location in plan and cross section of any above ground and underground storage tanks for flammable or combustible liquid and associated piping, in relation to the TTC structure/R-O-W.
6. A National Fire Protection Association (NFPA) 130 review to ensure design requirements outlined in the document "Standard for Fixed Guideway Transit and Passenger Systems", latest edition are met in relation to TTC's infrastructures.
7. A study including a Computational Fluid Dynamics (CFD) model report indicating and analyzing the relationship of the development's air in-take/discharge openings to TTC's ventilation system shaft openings and station entrance openings. The development's building entrances and exits are required to be located at a minimum distance of 12 meters from TTC ventilation system shafts which are used for normal, maintenance and emergency ventilation serving as in-take or exhaust vents dispersing: noise, fumes (maintenance operation), high temperature smoke gases (emergency operation). This is to be considered in the design of any adjacent buildings.
8. A geotechnical investigation report showing up-to-date geotechnical and geo-environmental conditions at the site of the development and shall include, where applicable, recommendations to mitigate any impact on TTC structures.
9. An impact assessment statement from the structural and/or geotechnical consultant stating that the Development does not adversely affect TTC structures. No additional

load to existing TTC structures is allowed. No reduction in load to existing TTC structures is allowed where such reduction in load adversely affects TTC structures.

10. Written acknowledgement that noise, vibration, electro-magnetic interference and atmospheric emissions from TTC's operations have been considered in the design of the project, and appropriate mitigation measures applied.
11. Electrolysis and Stray Current Study, completed by a Professional Engineer.

7.2 Level 3 & 4 Reviews – Developments Founded Near TTC Structures or R-O-W

Applies to developments that have the potential to change the loading conditions on the TTC structure, create unbalanced lateral earth pressure on the TTC structure, undermine the TTC structure, or to affect TTC operations.

In addition to the Level 1 & 2 submission requirements, TTC requires the following drawings/documents.

1. Structural analysis/calculations by the Developer's consultant of the effects of all applicable loadings, including construction loading, on the TTC structure, demonstrating that the TTC structure will not be adversely affected by the development, including solutions to mitigate any impact on TTC structures. The documentation must include identification of the affected TTC structural units.

Note: The review of all submitted structural analysis/calculations will focus on design assumptions, structural model, loads, load combinations, and codes that were used and final results with discussion and/or recommendations. The review will be on the part of the development that may affect TTC structures. All submitted calculations must be legible and presented in a logical and easy-to-follow format. TTC will not accept any responsibility for the accuracy and adequacy of the calculations, which will remain the sole responsibility of the Developer.

2. Documentation showing that the excavation support system and permanent structure adjacent to the TTC property are designed for apparent "at-rest" earth pressures. The "at-rest" horizontal earth pressure must be interpreted either by in-situ methods (K_0 stepped blade, self boring/pre-bored pressuremeter, dilatometer or cone penetration test) or through laboratory testing of undisturbed samples (triaxial and oedometer testing).
3. Pressuremeter testing, or other suitable in-situ testing (such as dilatometer or cone penetration tests), must be carried out to confirm the Elastic modulus of the soil (E and E_r) and variation with depth for use in modelling to confirm that there are no impacts to the TTC structure. If pressuremeter testing is carried out, each test must contain at least three unload-reload loops.
4. Shear wave velocity geophysical testing, such as multichannel analysis of surface waves (MASW), must be carried out to a depth of 30m to confirm the shear wave velocity below the site in support of geotechnical design.

5. For excavations within a zone of influence that has the potential to induce movement of TTC structures, a finite element or finite difference soil-structure interaction model must be provided to estimate the potential effects on the TTC structure. If the excavation is within 3m of a TTC underground structure or tunnel, sufficient geotechnical investigation must be carried out to support a linear or non-linear constitutive soil model or suitable constitutive rock model to accurately estimate ground movements. Sufficient geotechnical investigation requirements include:
 - a. in cohesive soils and glacial tills: PQ soil coring/Shelby tube sampling, triaxial/direct shear tests, oedometer tests and unconfined compressive strength tests;
 - b. in non-cohesive soils (sands and silts): PQ coring/Shelby tube sampling, and direct shear/triaxial tests, and iii) in rock: HQ rock coring, unconfined compressive strength tests with elastic modulus measurements (as per ASTM D7012), and in situ rock pressuremeter (borehole dilatometer) testing.

At least three of each of the above laboratory tests is required, with the total number of tests to be assessed to adequately support the soil-structure modelling.

6. Structural drawings including caisson/foundation plans, sections and details, floor plans, column and wall schedules and loads on foundation for the development. Show the relationship of the development to TTC's structure in both plan and section.
7. Provide a report on demolition and structural assessment if requested by the TTC. The report shall include, but not be limited to the following:
 - a. Site description;
 - b. Building description for the building to be demolished;
 - c. Structural assessment derived from the field investigation and available record drawings for the structural system to be demolished;
 - d. Demolition method to be used in removing superstructure, substructure, or removal of part of TTC structure;
 - e. List and provide details of weight, size, track length, swing, lifting capacity, etc. of equipment / plant to be deployed;
 - f. Demolition procedures and stages with drawings;
 - g. Proposed safety and environmental protection measures;
 - h. Record drawings of the structure to be removed;
 - i. Photos of the site and structure.
8. Shoring design criteria and description of excavation and shoring methods.

Note: Tie-backs shall be kept a minimum of 3m away from all TTC structures if the tie-backs are pressure-grouted. Packers shall be used for pressure-grouting. Tie-backs can be placed a minimum of 1.5m from all TTC structures only if the tie-backs are not pressure-grouted. The maximum grouting pressures for all tie-backs that are within 6m of subway structures shall be specified on the drawings. Tie-backs that are above any parts of TTC structures and within 10m of TTC structure's exterior walls may need to be de-stressed. The requirement for de-stressing of tie-backs will be determined by TTC on a case by case basis during the Development Review.

9. Ground water control plan, including the determination of the short-term (during construction) and long-term effects of dewatering on the TTC structure, and provision of assurances that the influence of dewatering will have no impact on the TTC structure. If a TTC structure is exposed due to construction of the development, the Developer shall design and install a TTC accepted water proofing and drainage system for the affected TTC structure.
10. Monitoring Plan for movement of the shoring and TTC structure prior to and during construction of the development, including Action Protocol. A generic sample document that shows the values of Review and Alert levels and corresponding Action Protocol is attached to this Guide as Appendix III.
11. Site servicing plans which show the utility installations proposed through or adjacent to TTC property. This plan shall show TTC utility connections where associated municipal connections are to be modified.
12. Landscaping plans and details including potential impact on subway structures.
13. At the discretion of TTC, and depending upon the nature of the development itself, Mechanical and Electrical drawings may also be required.
14. A pre-construction Condition Survey of the TTC structure, including a Survey to confirm locations of existing walls and foundations of the TTC structure. A post-construction Condition Survey as a means of observing any new structural or non-structural deficiencies or damage to TTC structures will be required upon completion of the development. The requirements for the Condition Surveys are shown in Appendix IV.
15. Crane locations, loadings with other pertinent details, such as, axle loads and configuration, outrigger loads and configuration, size of the spread for each outrigger, lifting area diagram, maximum/minimum loads on each leg/outrigger. Additionally, the Developer shall verify the existing TTC structures for all possible vehicle and equipment loads as per TTC Design Manual and the Codes and Standards referenced therein.
16. For proposals adjacent to TTC Substations, refer to Appendix V for additional information.

7.3 Level 5 & 6 Reviews – Developments Overtop of or within 1 metre of a TTC Structure and/or Connecting to TTC Structure

In addition to the Level 1-4 submission requirements, the TTC may require the following additional drawings/documents:

1. Ontario Building Code (OBC) compliance review, specifically including Section 3.13 Rapid Transit Stations, and including a plan depicting egress routes from the station.
2. Drawings showing provision for make-up air to the station if existing sidewalk entrances are removed by the development.

3. Drawings/documentation of construction method, hoarding, construction access, and haul routes.
4. Details of remedial work to TTC structures in order to support roof at wall openings, including structural analysis/calculations, drawings and construction sequencing.
5. Details regarding the replacement/repair of the waterproofing system of the affected TTC structure, including TTC expansion joints, using equal or compatible with the existing waterproofing system.

7.4 Property Protection Technical Reviews

Development proposals which are within 60 metres of a planned TTC facility or right-of-way will also be required to undergo a TTC technical review. The technical review process will be similar to a development which is in proximity to an existing TTC facility. However the level of review, review fee, and submission requirements will vary depending upon the type of development and the status and stage of the planned TTC infrastructure. The technical review requirements will be determined on a case by case basis following the process as outlined above in Section 1.0 *Purpose of a TTC Review*. Additional information is provided in Appendix VI.

7.5 Entrance Connection Technical Review Submissions

Entrance Connection proposals will require a separate technical review from that of the main development. Technical Reviews for Entrance Connections do not require an additional Technical Review fee and are included as part of the Entrance Connection fee. However the technical review does require the submission of detailed plans and specifications relating to the connection and confirmation that the Entrance Connection is designed in accordance with TTC Design Standards. The following is a list of submission requirements regarding the Entrance Connection technical review.

1. Details of stairs, doors, sprinklers and ventilation for the development connection.
2. Architectural finish materials selection, including samples.
3. Wayfinding and signage plans and specifications, designed in accordance with TTC's Signage Manual and Standards; including development connection to TTC and concept for general wayfinding within building.
4. Drawings of Collector Booth, fare collection equipment, CCTV, intercom, fire alarm, easier access elevator, all designed in conformance with TTC Design Standards, including accessibility requirements, as applicable to the subject proposal.
5. As-built reproducible drawings and electronic files for TTC documentation records. The electronic file and the drawings are to be in Microstation V8 (.dgn) format ("CADD Standards and Procedures Manual", current edition is available for reference).

6. The Developer may also be required to initiate an Electrical Load Study to determine if power is available to meet its requirements. The Load Study shall be undertaken for a period of time deemed to be adequate by the Developer's Professional Engineer. In addition to evaluating the general power availability for the facility, the Load Study shall evaluate the portion of the electrical system that may be impacted by the connection of the new load. The Load Study report shall evaluate also the impact of seasonal load on the system, if required. The Load Study shall specify the point of recommended connection for the proposed new load. The Load Study shall also specify the main breaker to be installed in the TTC switchboard as part of the new service by the Developer. The Load Study report shall be sealed and signed by the Professional Engineer.
7. TTC electrical distribution network dedicated to the new fare Gate Systems requires special attention to details for a new Developer connection. The Developer shall provide a preliminary design related to electrical modifications for fare gate implementations, for electrical integration to existing electrical distribution system. Preliminary design shall be reviewed by TTC.

7.6 Technical Review Drawing & Report Submission Requirements

Level 1-6 Technical Reviews require the following number of documents to constitute a complete application and resubmissions to review comments.

Plans & Property Surveys & Reports:

- One (1) complete set of full size (24"x36") plans and surveys; folded to 8.5"x11" format showing the title block; not stapled.
- Five (5) complete sets of half size (11"x17") plans and surveys (The required number of sets will be confirmed during preliminary discussions between TTC and the Developer).
- Five (5) copies of all required reports (stapled) according to level of review.

Electronic Format:

- One (1) USB containing all plans, Property Surveys, and reports in PDF format.
- One (1) USB containing digital files of the Property Surveys. The digital files of the surveys are required to be in Microstation or AutoCAD format.

The following requirements will apply:

1. The requirements shown above apply to all submissions including supplemental submissions and responses/resubmissions to review comments.
2. Each technical review submission shall be identified as one of the following:
 - demolition or;
 - construction.
3. Once the initial review is completed and review comments are provided to the Developer, the following submission must include responses to the review comments provided.

4. New submissions shall not be accepted until responses for the previous submission have been provided.

8.0 TTC Contact for Review Process

All submissions, responses and contact for the TTC Technical Reviews are through the TTC's Adjacent Development Review Team within the Property Planning & Development Department. Please contact Adjacent Development Review at PropertyReview@ttc.ca to initiate the Technical Review process.

NON-DISCLOSURE AGREEMENT

This non-disclosure agreement ("Agreement") is entered into as of the _____ of _____, _____ between the Toronto Transit Commission, having a place of business at 1900 Yonge Street, Toronto, Ontario, M4S 1Z2 (the "TTC"), and ●, having a place of business at ● (the "Company"). The TTC and the Company are collectively referred to as "Parties" and each one as a "Party".

WHEREAS ● ("Purpose");

AND WHEREAS in furtherance of the Purpose, the TTC will provide to the Company certain Confidential Information (as herein defined), subject to the terms and conditions set forth below.

ARTICLE 1. DEFINITIONS

- 1.1 In this Agreement, "Confidential Information" means any and all material and/or information of the TTC which has or will come into the possession or knowledge of the Company in connection with or as a result of entering into this Agreement, including information concerning the TTC's past, present or future customers, suppliers, technology, or business. For the purposes of this definition, "information" and "material" includes tangible data, patents, copyrights, trade secrets, processes, business rules, tools, business processes, programs, designs, formulae, marketing, advertising, financial, commercial, sales or programming materials, equipment configurations, system access codes and passwords, written materials, compositions, drawings, diagrams, photographs, surveys, specifications, computer programs, studies, works in progress, visual demonstrations, ideas, concepts, and other data, in oral, written, graphic, electronic, or any other form or medium, both in its original form and as part of a compilation or derivative of any of the foregoing.
- 1.2 In this Agreement, reference to the "TTC" shall include commissioners, officers, employees, agents, contractors and consultants employed or retained by the TTC, as the case may be and reference to the "Company" shall include directors, officers, employees, agents, contractors and consultants employed or retained by the Company, as the case may be.

ARTICLE 2. USE AND DISCLOSURE OF CONFIDENTIAL INFORMATION

- 2.1 The Company shall,
- 2.1.1 use the Confidential Information solely for the Purpose as set out herein;
- 2.1.2 hold the Confidential Information in confidence and shall not sell, assign, transfer or otherwise disclose the Confidential Information, or any information or materials derived therefrom, to any third party without the prior consent of the TTC, save and except as otherwise provided herein;
- 2.1.3 employ at least the same degree of care to protect the secrecy and confidentiality of the Confidential Information as it uses to protect its own confidential and proprietary information and materials, but in no event less than reasonable care;

- 2.1.4 maintain the Confidential Information in a secure place and restrict the release, access and use of the Confidential Information to those officers, employees and consultants who must have access to the Confidential Information consistent with the Purpose; and
- 2.1.5 ensure that each person to whom Confidential Information is disclosed to in accordance with clause 2.1.4 is advised, prior to the disclosure, of the confidential nature of the Confidential Information.
- 2.2 The Company shall not,
 - 2.2.1 remove any proprietary, copyright, trade secret or other proprietary rights legend from any form of Confidential Information; or
 - 2.2.2 make any public announcement of disclosure concerning the contents of this Agreement beyond the disclosures authorized hereunder without the prior written consent of the TTC unless otherwise required by law.
- 2.3 Immediately upon written request by the TTC, the Company shall return all copies of the Confidential Information in its possession to the TTC or certify that all copies in its possession or control have been destroyed.
- 2.4 In the event of a breach of any of the foregoing provisions, the Parties agree that the harm suffered by the TTC would not be compensable by monetary damages alone and accordingly, that the TTC shall, in addition to other available legal or equitable remedies, be entitled to an injunction against such breach.

ARTICLE 3. EXCEPTIONS

- 3.1 Notwithstanding anything to the contrary herein, "Confidential Information" does not include information or material,
 - 3.1.1 which is publicly available when it is received by or becomes known to the Company or which subsequently becomes publicly available through no fault of the Company (but only after it becomes publicly available);
 - 3.1.2 which is already known to the Company at the time of its disclosure to the Company and is not known by the Company to be the subject of an obligation of confidence of any kind;
 - 3.1.3 which is independently developed by the Company without any use of or reference to the Confidential Information and which such independent development can be established by evidence that would be acceptable to a court of competent jurisdiction; and
 - 3.1.4 which is received by the Company in good faith without an obligation of confidence of any kind from a third party who the Company had no reason to believe was not lawfully in possession of such information free of any obligation of confidence of any kind, but only until the Company subsequently comes to have reason to believe that such

information was subject to an obligation of confidence of any kind when originally received.

ARTICLE 4. DISCLOSURE BY LAW

- 4.1 Should the Company be required by law or policy or be requested by legal process or regulatory authority to disclose any Confidential Information, the Company will provide to the TTC with prompt written notice of such requirement or request so that the TTC may seek an appropriate protection order or pursue such other action, remedy or assurance necessary to preserve the confidentiality of the Confidential Information, or waive compliance with any of the provisions of this Agreement, or both, and the TTC will fully co-operate with and not oppose the Company in respect of such matters. If, in the absence of either a protective order or a waiver by the TTC, the Company, in the reasonable opinion of reputable legal counsel, is required by law to disclose any Confidential Information or stand liable for contempt or to suffer other censure or penalty on any failure to so disclose, the Company may, without liability hereunder, disclose that portion, and only that portion, of the Confidential Information that is required to be disclosed.

CLAUSE 5. NOTICE

- 5.1 Any notice herein required or permitted to be given by a Party to the other Party shall be in writing and shall be delivered by hand, sent by registered mail (except during a postal disruption or threatened postal disruption), by facsimile or by courier to the applicable address as set out below:

For the TTC:

Toronto Transit Commission
1900 Yonge Street
Toronto, Ontario M4S 1Z2
Attention: Chief Financial and Administration Officer
Facsimile: 416-485-9394

For the Company:

•
•
•

Attention:
Facsimile:

- 5.2 Any communication delivered by hand or courier shall be deemed to have been validly and effectively delivered upon receipt. Any communication sent by registered mail shall be deemed to have been validly and effectively delivered on the third (3rd) business day following the date of mailing. For the purposes of this clause 5, "business day" shall mean a day other than a Saturday, a Sunday, Family Day (under the *Employment Standards Act, 2000*, S.O. 2000, c.41) or a statutory holiday in the Province of Ontario.

CLAUSE 6. GENERAL PROVISIONS

- 6.1 The Company acknowledges and agrees that the TTC does not make any representation or warranty with respect to the accuracy of the Confidential Information and the Company accepts responsibility for verifying the accuracy and completeness of the Confidential Information disclosed by the TTC and accepts all responsibility associated with the misuse, misinterpretation or misapplication of the Confidential Information, or any part thereof by the Company.
- 6.2 The disclosure of the Confidential Information by the Company permitted under this Agreement and in accordance with this Agreement shall not constitute a waiver of any of the Company's obligations of confidentiality under this Agreement.
- 6.3 This Agreement may not be assigned by the Company in whole or in part, without the TTC's prior written consent, which consent may be unreasonably withheld.
- 6.4 If any provision, or portion thereof, of this Agreement is determined by a court of competent jurisdiction to be invalid, illegal or unenforceable, such determination shall not impair or affect the validity, legality or enforceability of the remaining provisions of this Agreement, and each provision, or portion thereof, is hereby declared to be separate, severable and distinct.
- 6.5 A term or condition of this Agreement can be waived or modified only by written consent of the Parties. No failure or delay in exercising any right, power or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any right, power or privilege hereunder.
- 6.6 No single or partial exercise of any right or remedy under this Agreement shall preclude any other or further exercise of any other right or remedy in this Agreement or as provided at law or in equity. Rights and remedies provided in this Agreement are cumulative and not exclusive of any right or remedy provided at law or in equity.
- 6.7 This Agreement, including the recitals, constitutes the complete and exclusive statement of the terms and conditions between the Parties with respect to the subject matter hereof and supersedes all prior and contemporaneous oral or written statements which are inconsistent herewith.
- 6.8 Title to the Confidential Information and any copies thereof shall not pass or transfer to the Company.
- 6.9 This Agreement may only be modified by written agreement of the Parties.
- 6.10 This Agreement shall enure to the benefit of and be binding upon the respective trustees, receivers, heirs, executors, administrators, successors, and permitted assigns.
- 6.11 The Company's obligations of confidentiality under this Agreement shall continue until TTC releases in writing the Company of its obligations of confidentiality under this Agreement..
- 6.12 This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the federal laws of Canada applicable therein. The Parties agree that any action, proceeding, application or claim commenced by one Party against the other Party relating to or

arising out of this Agreement shall be commenced in the City of Toronto, Province of Ontario, Canada.

- 6.13 This Agreement may be executed in counterparts, each of which shall be deemed to be an original and all of which taken together shall be deemed to constitute one and the same instrument. Counterparts may be executed either in original, facsimile or electronic form and the Parties adopt any signatures received by facsimile or electronic form as original signatures of the Parties.

[THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK.]

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement.

TORONTO TRANSIT COMMISSION

Per: _____
Name: _____
Title: _____
Date: _____

Per: _____
Name: _____
Title: _____
Date: _____

I/We have authority to bind the corporation.

•

Per: _____
Name: _____
Title: _____
Date: _____

Per: _____
Name: _____
Title: _____
Date: _____

I/We have authority to bind the corporation.

Appendix II – Land Surveys and Associated Submittals

Contents

1. Scope
 2. Overview
 3. List of Possible Submittals
 4. Required Submittals
 5. Submittal Content Requirements
 - 5.1 Design Drawings
 - 5.2 Existing Utilities Drawings
 - 5.3 Tunnel Surveys
 - 5.4 Land Survey Drawings
 - 5.5 Point Layout Tables
 - 5.6 Point Location Survey Drawings
 6. Glossary
-

1. Scope

1. This document applies to Technical Reviews Level 2 and above and only to those locations within the proposed development that are adjacent to, or in the vicinity of ***TTC Infrastructure*** and TTC facilities.
2. Submittal requirements are defined in the main body of this document.
3. Terminology shown in ***bold italics*** throughout this document is defined in the glossary section.

2. Overview

1. A review in accordance with Appendix II will assess whether or not designers have accurately shown the geometric relationship between the ***Proposed Work*** and adjacent ***TTC Infrastructure*** especially subsurface ***TTC Infrastructure*** that might be at risk during construction.
2. The Developer shall therefore commission new, up-to-date ***Land Surveys*** of existing site conditions, including ***TTC Infrastructure***, for use during design.
3. All ***Land Surveys*** shall be performed by a licensed Ontario Land Surveyor authorized by the AOLS to practice in Ontario under the Surveyors Act.
4. If required the Developer shall also commission new, up-to-date ***Utility Investigations*** of existing adjacent utilities, for use during design.

5. All **Utility Investigations** shall be performed by a licensed Engineer authorized by the PEO to practice in Ontario under the Engineers Act.
6. Designers shall publish **Clearance Dimensions** and **Layout Dimensions** for the **Proposed Work** on their design submission, these dimensions being based on the aforementioned **Land Surveys** and **Utility investigations**.
7. The Developer shall submit these surveys and investigations together with their main design submission.

3. List of Possible Submittals

No.	SUBMITTAL	
1	Design Drawings (TTC Tunnels Compiled)	
2	Design Drawings (TTC Tunnel Interiors Surveyed)	
11	Property Land Survey Drawings (TTC Tunnels Compiled)	
12	Property Land Survey Drawings (TTC Tunnel Interiors Surveyed)	
21	Topographic Land Survey Drawings (TTC Tunnels Compiled)	
22	Topographic Land Survey Drawings (TTC Tunnel Interiors Surveyed)	
31	Existing Utilities Drawings (Show utilities to ASCE 38-02 Level B or Level A.	
41	SOE Gridline Intersection Coordinates (Show XY values on shoring drawings)	
42	SOE Tieback Origin & Terminus Coordinates (Show XYZ values on shoring drawings)	
51	Point Layout Tables – Part A	(Excavation Centre Points, Bend Points and Corner Points)
52	Point Layout Tables – Part B	
53	Point Location Survey Drawing	

4. Required Submittals

SCENARIO	CONDITIONS		
	PW > 3m from TTCl	PW ≤ 3m from TTCl	PW ≤ 3m from SU & SU ≤ 3m from TTCl
Sites on private property.	1, 11 & 21.	2, 12, 22 & 31* (*If TTCl is SU)	2, 12, 22 & 31.
Sites on private property with SOE Systems.	1, 11 & 21.	2, 12, 22, 41 & 42.	2, 12, 22, 31, 41 & 42.
Sites on private property with Discrete Vertical Excavations.	1, 11, 21, 51 & 52.	2, 12, 22, 51, 52 & 53.	2, 12, 22, 31, 51, 52 & 53.
Sites on public roads with Discrete Vertical Excavations.	1, 21, 51 & 52.	2, 22, 51, 52 & 53.	2, 22, 31, 51, 52 & 53.
Legend: PW denotes Proposed Work TTCl denotes TTC Infrastructure SU denotes Subsurface Utilities			

5. Submittal Content Requirements

5.1. Design Drawings

1. Show a note on the face of the drawing entitled "SOURCE OF LAND SURVEY DATA". The Note shall cite the **Land Surveyor** who signed the **Land Survey Drawings**. The note shall be in the form: "Land Survey Data (insert description of in scope location within site) as shown hereon, was taken from Land Survey Drawing(s): (insert list of numbers) prepared for the project by (insert name of Land Surveyor), O.L.S."
2. Show a note on the face of the drawing entitled "SOURCE OF UTILITY DATA". The Note shall cite the **Utility Engineer** who signed the **Existing Utilities Drawings**. The note shall be in the form: "Utility Data (insert description of in scope location within site) as shown hereon, was taken from Existing Utilities Drawing(s): (insert list of numbers) prepared for the project by (insert name of Utility Engineer), P. Eng."
3. Show a note on the face of the drawing entitled "SOURCE OF TTC TUNNEL DATA".
 - a. If TTC Tunnels were compiled or surveyed by the project **Land Surveyor**, then the note shall be in the form: "TTC Tunnel Data shown hereon taken from Land Survey Drawing(s): (insert list of numbers) prepared for the project by (insert name of Land Surveyor), O.L.S."
 - b. If TTC Tunnels were compiled then the note shall be in the form: "TTC Tunnel Data shown hereon is compiled from TTC Construction Contract Drawing(s): (insert list of numbers) obtained from TTC".
4. Show TTC Alignment and TTC Tunnels
 - a. Show existing TTC structures in plan, profile and cross section views. Show in all views: TTC Tracks, TTC Reference Lines with chainages, top of rail elevations and approximate top of structure elevations.
 - b. If TTC Tunnels are box structures, show in all views: contraction joints, roof outlines, wall outlines, invert outlines, TTC Unit Numbers, and show TTC Reference Line chainages and elevations at each contraction joint and at the midway point between contraction joints.
 - c. If TTC Tunnels are bored or mined tunnels, show in all views: tunnel outlines, invert outlines, TTC Reference Line chainages and elevations every 10m
5. Show **Clearance Dimensions** from the exterior of TTC tunnels to: adjacent utilities, property lines and to the **Proposed Work**.
6. CADD Files shall be compatible with **TSRS** (Toronto Spatial Reference System).

5.2. Existing Utilities Drawings

1. Show notes for "SOURCE OF LAND SURVEY DATA" and for "SOURCE OF TTC TUNNEL DATA" in accordance with previous Design Drawings section.
2. Show TTC Alignment and TTC Tunnels in accordance with previous Design Drawings section.
3. Show utilities classified in accordance with ASCE 38-02. Utilities within the scope of this review shall be investigated and classified as either Level B or Level A.
4. Show ***Clearance Dimensions*** from the exterior of TTC tunnels to: adjacent utilities and to property lines.
5. Drawings shall be signed and dated by the Utility Engineer.
6. CADD Files shall be compatible with ***TSRS*** (Toronto Spatial Reference System).

5.3 Tunnel Surveys

1. Survey the tunnel interior and compile the exterior from TTC structural drawings.
2. Survey cross sections at the intervals and locations listed in the table below.
3. Survey cross sections adjacent to tie-backs, boreholes, piles and other ***Proposed Work***.

Structure	Cross Section Intervals	Cross Section Survey Point Locations
Bored Tunnels	@ 10m intervals	Face of ring at 9, 10:30, 12, 1:30 & 3 o'clock (5 points)
Box Structures	@ all joints & equally spaced in between, @ intervals not > 10m	Face of wall at haunch (2 points, 1 on each side) Face of roof slab at haunch (2 points, 1 on each side) Face of roof slab at 12 o'clock (1 point)
All Structures		Top face of invert or tie between rails at 6 o'clock (1 point) Top centre of rail head (2 points, 1 on each rail) Top of walkway/serviceway at edge (2 points, 1 each side) Top of walkway/serviceway at wall (2 points, 1 each side)

5.4 Land Survey Drawings

1. Show a unique drawing number, sheet number and revision number.
2. Show 3 HCM values and 2 BM values used for the survey.
3. Show coordinate values for all surveyed property corners.
4. Show all coordinates and elevations in ***TSRS*** (Toronto Spatial Reference System).

5. Show all surveyed TTC tunnel cross sections in accordance with the previous Tunnel Surveys section.
6. Show TTC Alignment and TTC Tunnels in accordance with the previous Design Drawings section.
7. Show notes for "SOURCE OF TTC TUNNEL DATA" in accordance with the previous Design Drawings section.
8. Show **Clearance Dimensions** from the surveyed interior of TTC tunnels to: adjacent property lines as measured.
9. Show assumed wall thicknesses of TTC tunnels based on TTC drawings.
10. Show **Land Surveyor's** certificate, date and signature.
11. CADD Files shall be compatible with **TSRS** (Toronto Spatial Reference System).

5.5 Point Layout Tables

POINT LAYOUT TABLES – Part A

Horizontal Clearance:			HC value is negative when Item is over TTC structure.		
Items			Clearance		
ID#	N	E	TTCD#	TTCCH	HC
LEGEND:			NOTES:		
N denotes Northing		TTCCH denotes TTC Chainage		Publish Exact Chainage of known Points	
E denotes Easting		(from TTC Drawing)		Publish all other values to 0.1m	
TTCD# denotes TTC Drawing Number		HC denotes Horizontal Clearance			

POINT LAYOUT TABLES – Part B

Vertical Clearance:			VC value is negative when Item is below top of TTC structure.		
Items			Clearance		
ID#	OGE	TE	TTCD#	TTCTSE	VC
LEGEND:			NOTES:		
OGE denotes Original Ground Elevation		TTCTSE denotes TTC Top of Structure		Publish all values to 0.1m	
TE denotes Terminus Elevation		Elevation (from TTC Drawing)			
TTCD# denotes TTC Drawing Number		VC denotes Vertical Clearance			

5.6 Point Location Survey Drawings

1. The **Land Surveyor** shall either locate pre-existing points demarcated by others or demarcate new points such as those shown on the Point Layout Tables.
2. Each point shall be clearly demarcated on the ground with a symbol and the ID#.
3. The **Land Surveyor** shall prepare a **Land Survey Drawing** showing all demarcated points on the ground in relation to site **Topographic Features** and shall list the XYZ coordinates for each point on the face of the drawing.
4. In addition to coordinates, for additional verification, the drawing shall show measured chainage and offset distances to each demarcated point from the nearest surveyed baseline that can easily be found in the field such as a curb line, building line, wall or other fixed topographic baseline or **Land Survey Control** with a zero starting point.
5. The **Land Survey Drawing** shall be entitled "Point Location Survey".

6 Glossary

CATEGORY	TERMS and DEFINITIONS
General	<ul style="list-style-type: none">- TTC Infrastructure is any TTC utility, tunnel, station or structure, either existing or proposed, especially subsurface TTC Infrastructure.- Proposed Work is any proposed Excavation that may cause Conflicts with TTC Infrastructure.
	<ul style="list-style-type: none">- Excavations for the purposes of this document are either SOE Systems or Discrete Vertical Excavations.- SOE Systems are Support of Excavation Systems with or without caisson walls, pile walls, pile and lagging walls, shoring, tiebacks, and other elements, and shall have a published design gridline system which shall have published TSRS layout coordinates for major gridline intersection points.- Discrete Vertical Excavations are individual and separate vertical excavations, not part of any SOE System, including: vacuum test holes, boreholes, wells, piles, caissons, utility pole footings, trenches and test pits with or without shoring and shall have published TSRS layout coordinates for their centre points and corner points.
	<ul style="list-style-type: none">- Conflicts are classified as Direct, Indirect or Utility Related.- Direct Conflicts are physical contacts with TTC Infrastructure by the Proposed Work.- Indirect Conflicts are Physical changes to TTC Infrastructure resulting from physical changes to surrounding conditions caused by the Proposed Work, especially changes to soil conditions.- Utility Related Conflicts are possible Direct or Indirect Conflicts with nearby subsurface utilities caused by the Proposed Work.

CATEGORY	TERMS and DEFINITIONS
Datum	<ul style="list-style-type: none"> - TSRS (Toronto Spatial Reference System) is defined as a system of horizontal coordinates and vertical elevations used in CADD files. - Horizontal Datum is the City of Toronto 3 degree MTM, NAD27 horizontal datum (74 adjustment) and shall be derived from Land Survey field measurements between at least 3 local Horizontal Control Monuments (HCMs) with pre-existing TSRS coordinate values published on the provincial COSINE website. - Vertical Datum is the 1928 Geodetic Survey of Canada vertical datum (pre-1978 adjustment) and shall be derived from Land Survey field measurements between at least 2 local Benchmarks (BMs) with pre-existing TSRS elevation values published on the provincial COSINE website. NOTE: TTC Drawings before 1970 use Old City datum.
Utility Locating	<ul style="list-style-type: none"> - A Utility Engineer is defined in the Overview section of this document. - A Utility Investigation is up-to-date investigation of subsurface utilities conducted exclusively for the project under the supervision of the Utility Engineer in accordance with the ASCE 38-02 Standard Guideline. The Land Surveyor shall perform the Land Surveys required for any Level A classifications. - Existing Utilities Drawings are hardcopy drawings, together with associated CADD Files, prepared exclusively for the project by the Utility Engineer, that graphically show the results of the Utility Investigation, that are prepared to ASCE 38-02 specifications and that are signed by the Utility Engineer.
Land Surveying	<ul style="list-style-type: none"> - A Land Surveyor is defined in the Overview section of this document. - A Land Survey is defined as set of up-to-date field measurements and related fieldwork performed exclusively for the project under supervision of the Land Surveyor, to locate Land Survey Controls and Topographic Features required for the project. - Land Survey Controls are benchmarks, control points, property corners, control lines, property lines, alignment centerlines, track centerlines, gridlines and other geometrically inter-related reference markers and baselines that are both found and set in the field by the Land Surveyor. - Topographic Features are both natural and man-made features such as spot elevations, contours, vegetation, drainage, buildings, structures, railways, roadways, walls, fences, walkways, street furniture, poles, wires, utility covers, utility demarcations and all other visible and accessible physical features including similar features inside buildings and inside subsurface TTC infrastructure. - Land Survey Drawings are hardcopy drawings, together with associated CADD Files, prepared exclusively for the project by the Land Surveyor, that graphically show the results of the Land Survey, that are prepared to provincial, AOLS, or TTC standards and that are signed by the Land Surveyor. Drawings with the words "Sketch" or "This is not a Plan of Survey" or similar wording in the title or elsewhere are not Land Survey Drawings. Land Survey Drawings shall not contain measurements from sources other than from Land Surveys performed by the Land Surveyor.

CATEGORY	TERMS and DEFINITIONS
Dimensioning	<ul style="list-style-type: none"> - <i>Clearance Dimensions</i> are dimensions between the <i>Proposed Work</i> and existing <i>TTC Infrastructure</i>. A clearance dimension: may be horizontal - such as a setback shown in plan view; may be vertical – such as an elevation difference shown in profile or cross section or; may be perpendicular - such as a perpendicular distance from a diagonal tieback to the edge of a TTC box structure. - <i>Layout Dimensions</i> are dimensions between existing <i>Land Survey Controls</i> and the <i>Proposed Work</i> that can be used by the constructor to set out the location of the <i>Proposed Work</i> for placement during construction. <i>Layout Dimensions</i> shall be elevations, coordinates, distances, angles, bearings or any combination of these items. <i>Layout Dimensions</i> shall be accurate otherwise the <i>Proposed Work</i> might be placed in the wrong location during construction which in turn may cause <i>Conflicts</i> with <i>TTC infrastructure</i> possibly causing damage.

Appendix III - Monitoring Plan – Review and Alert Levels and Action Protocol

Where shoring / underpinning of structures adjacent to a TTC structure is required, monitoring of the TTC structure must be carried out.

The Monitoring Plan for the shoring and subway structures shall include all parameters that are to be measured and documented, all instrumentation and equipment to be used and a drawing showing location and type of monitoring instruments. The plan shall also include the value of the Review Level and the Alert Level and the corresponding Action Protocol.

The following review and alert levels apply to TTC structures and shoring.

	Review Level	Alert Level
Station and Tunnel Box Structure	2mm movement, includes displacement, deformation and rotation	3mm movement, includes displacement, deformation and rotation
Circular Tunnel	3mm differential movement over 9.4m track length 6mm movement, includes displacement, deformation and rotation	5mm differential movement over 9.4m track length 10mm movement, includes displacement, deformation and rotation
Ballast Track	5mm differential vertical movement over 9.4m track length 3mm differential horizontal movement over 9.4m track length 10mm maximum movement	6mm differential vertical movement over 9.4m track length 5mm differential horizontal movement over 9.4m track length 16mm maximum movement
Shoring, where TTC structure is within shoring Zone of Influence	10mm maximum movement	15mm maximum movement

All monitoring results for TTC Structures, underpinning and shoring shall be provided to the TTC within 24hrs when Alert Level is reached, otherwise weekly monitoring reports are required. The following monitoring frequencies should be followed, where required.

1. Electro levels within TTC structures: continuous real time monitoring.
2. Precision survey carried out on a case by case basis.
3. Inclinator readings on a twice weekly basis.

Review Level: If the displacement of the TTC structures or shoring reaches the value of the Review Level, the Developer shall conduct a review of the work completed with the area noted for the movement, and the Developer shall assess whether it is necessary to alter the method or sequence of construction.

Alert Level: If the displacement of the TTC structures or shoring reaches the value of the Alert Level, the Developer shall contact TTC immediately, and make the works secure and cease further work in the “affected” area. The Developer shall conduct a review of the monitoring and the work completed within the area of movement, and issues the results and comments to TTC. The Developer shall develop a remedy that is satisfactory to TTC. TTC will allow the Developer to resume work in the “affected” area only when the Developer has implemented corrective measures.

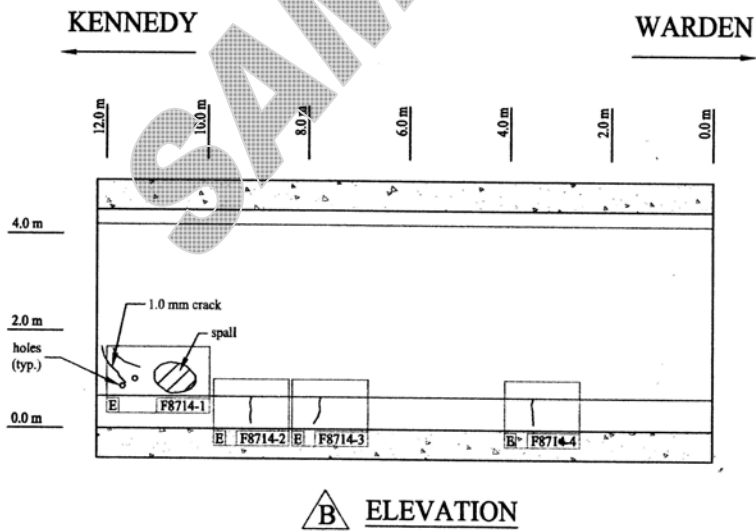
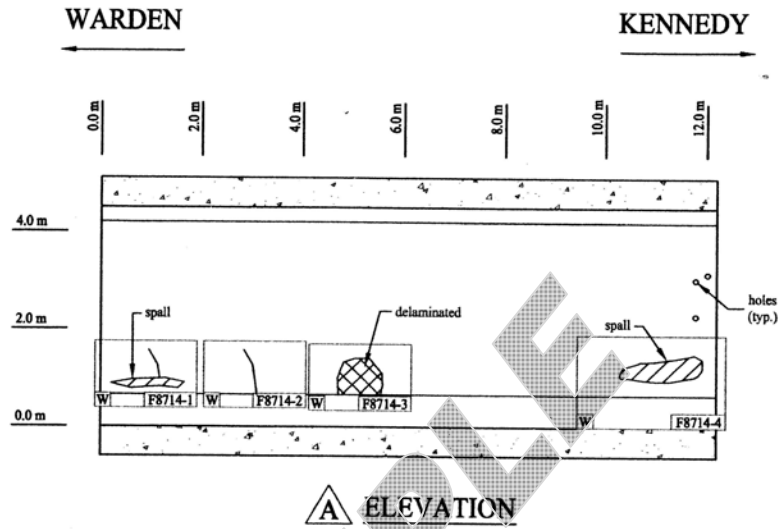
Appendix IV - Requirements for Condition Survey of TTC Structures

The Condition Survey of the TTC structures shall include a survey to confirm locations of existing walls, roof and foundations of the structures. The extent of the Condition Survey shall include one TTC structural unit (12m) beyond each end of the excavation for the Development structure.

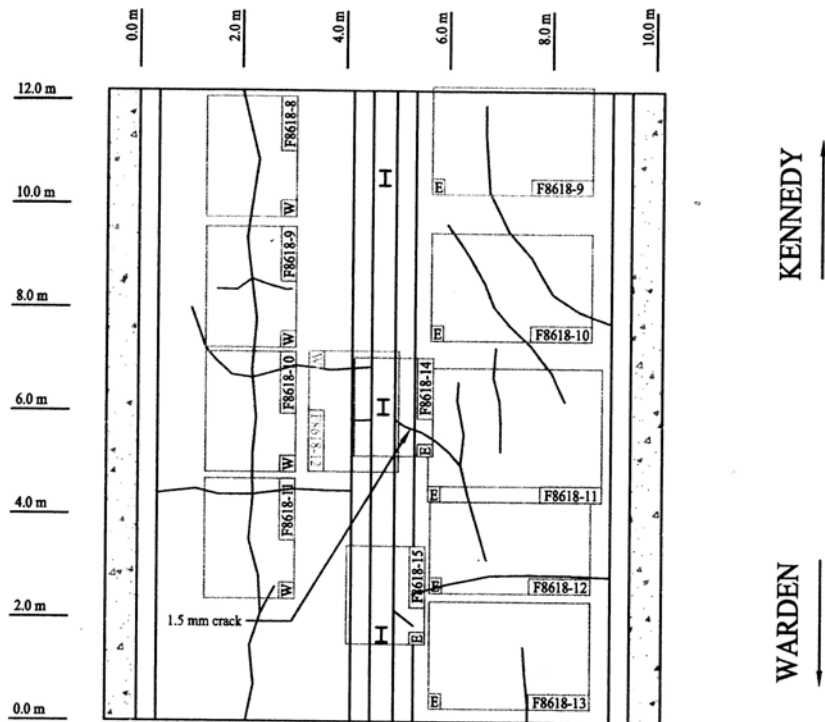
The Condition Survey report shall include sketches showing the locations and type of the “defects, in addition to a photographic record – see attached sample Sketches. In addition to a hard copy of the report, provide a CD with all of the actual photographs – original JPG or TIFF files – to allow for zooming in, and for post-processing, if necessary, to improve visibility. Show all photograph locations on the plans.

Measure the size of the cracks with a gauge and identify them in the written text of the report – see sample illustrations on following sheets.

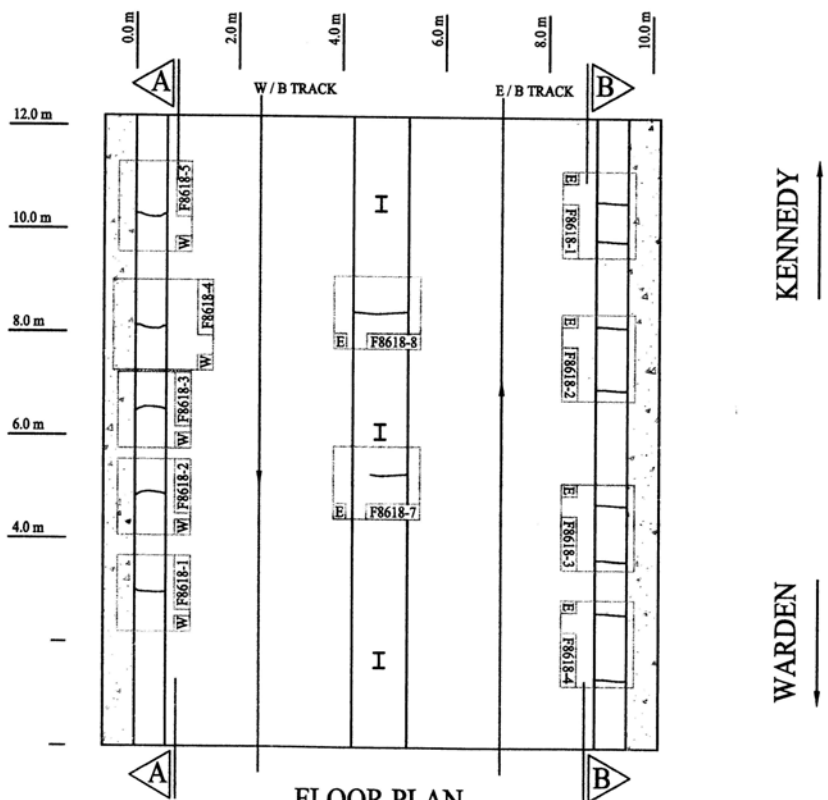
Standard industry practice is to follow MTO guidelines for structure inspections, which TTC does as well. According to MTO, the cracks are defined as hairline only if they are smaller than or equal to 0.3mm. Between 0.3mm and 1mm they are defined as medium and bigger than 1mm are called wide. If no cracks are mentioned up to 1mm as indicated in the survey, that means that TTC would not be able to capture crack width changes from let's say 0.3mm to 0.9mm as a result of construction, which may be significant to the durability of our structures. All cracks over 0.3mm should be indicated and shown in the survey.



Unit Number: F8714



REFLECTED CEILING PLAN



FLOOR PLAN

Unit Number: F8618

Appendix V – Building Adjacent to TTC Substations – A Guideline

1. The Substation cannot be de-energized during service periods, while transit vehicles are entering or exiting service, or, if required by maintenance, during non-service periods.
2. Access to the Substation, Substation parking, and public sidewalks around the substation cannot be blocked at any time.
3. The Substation cannot have any temporary or permanent items, including but not limited to structures, piles, scaffolding, cables, guy wires, and ropes, installed on, over, or under the land on which the Substation is situated, attached to or connected to any Substation component, including but not limited to structure, grounding system, equipment, fence, and pole.
4. The Substation components, including but not limited to electrical equipment, structures, fencing, and grounding, cannot be removed.
5. Due to the possible ground fault step and touch hazard around the Substation, only non-conductive, non-metallic building materials are permitted to be used along the Substation fence and/or property line, and must extend a minimum of 2 metres away from any change in direction and/or corner post of the fence, and a minimum of 2 metres above the top of the fence.
6. If conductive or metallic building materials or structures are used, a minimum of 2 metres of a setback from Substation fence and/or property line is required. The 2 metre setback may be reduced if Developer undertakes a ground fault step and touch potential study that meets OESC and IEEE requirements to determine the setback distance whereby the step and touch potential electrical shock hazards are within the acceptable tolerable values.
7. All design and construction work must take into consideration and account for all electrical, fire, and building codes with associated limits of approach, clearances, fire ratings, etc., for the electrical equipment installed in the Substation. Snow load studies for the impact on TTC structures and equipment must be supplied where required by the OBC.
8. It is the responsibility of Developer to consider the impact on the development and/or the Developer's property of EMI, EMF, noise, vibration, and DC stray current issues that may exist currently or in the future from the Substation.
9. No climbing points on the development's permanent structures shall exist within 3 metres of the fence and/or property line of the Substation, or if so they must come with permanent measures to prevent entry into the Substation. During construction, no climbing points shall exist within 3m of the Substation.
10. Shoring tie backs cannot interfere with the Substation grounding system and must take into account possible ground fault potential rise to prevent step and touch potential hazard to the construction workers.

11. Developer must install barriers during construction to limit the potential shock hazard to its construction workers carrying out the work of the development in the vicinity of the Substation.
12. Developer must protect TTC cables, as approved by TTC and using TTC approved contractor.
13. Excavations must not damage or interfere with TTC property or facilities.
14. Vegetation on TTC property may not be removed or disturbed.
15. The Substation must be protected from dust and debris during and after the development construction. The Developer must submit an action plan and risk assessment to be reviewed and approved by TTC.
16. Temporary construction barriers on Substation property might be permitted if agreed to with Substation Maintenance if they do not interfere with access to or parking at the Substation, or are not over existing buried ductbanks.
17. TTC property may not be used for access or storage without prior written agreement.
18. Adequate lighting and security must be maintained on the Developer's property during construction.

Appendix VI – Submission Requirements for Developments Adjacent or Overtop of Planned or Future TTC Structures or Right of Way (R-O-W).
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Information, drawings, and documents required for the review will vary by development. Some developments may require additional items not specifically identified below and additional requirements will be determined during Development Review. The information, drawings, and documents submitted by the Developer must demonstrate that the proposed development will not adversely impact planned/future TTC structures or R-O-W. **All documents must be signed and sealed by the appropriate professional responsible for preparing these documents.**

The following drawings/documents are required for review:

1. Newly commissioned Land Surveys and Utility Investigations showing up-to-date site conditions, in accordance with Appendix II of the Developer's Guide..
2. A site plan of the development showing plan, profile and cross sectional outlines of planned/future TTC structures or R-O-W, including centre lines of track for bored tunnel and reference lines of construction for box structure and other structures, together with minimum clearance dimensions between planned/future TTC structures or R-O-W and new proposed structures. A minimum clearance of 3m is required between planned/future TTC structures or R-O-W and new proposed development structures.
3. Architectural drawings, structural drawings, foundation drawings and excavation shoring drawings. Show distances between the development to planned/future TTC structure or R-O-W, as applicable, in both plans and sections.
4. Structural drawings including caisson/foundation plans, sections and details, floor plans, column and wall schedules and loads on foundation for the development.
5. Plan and cross-sections of the development and its founding elevations relative to planned/future TTC structures or R-O-W.
6. Location in plan and cross section of all above ground and underground storage tanks and associated piping showing distances to planned/future TTC infrastructure.
7. A geotechnical investigation report showing up-to-date geotechnical and geo-environmental conditions at the site of the development.
8. Written acknowledgement that noise, vibration, electro-magnetic interference and atmospheric emissions from planned/future TTC's operations have been considered in the design of the project, and appropriate mitigations measures applied.
9. Shoring drawings. Shoring and tie-backs shall be kept a minimum of 3m away from planned/future TTC structures or R-O-W. Shoring and tie-backs are not permitted above any parts of planned/future TTC structures. Tie-backs that are within 10m of planned/future TTC structure's exterior walls or R-O-W may need to be de-stressed. The requirement for de-stressing of tie-backs will be determined by TTC on a case by case basis during the

Technical Review. Shoring is to be illustrated with dimensions shown to planned/future TTC infrastructure at multiple points including the closest proximity to planned/future TTC infrastructure.

10. Site servicing plans which show the utility installations.
11. Landscaping plans and details.